

AGAYEV, N.A.

Effect of manganese and organic mineral microfertilizers on  
the growth, development and yield of corn. Dokl. AN Azerb.  
SSR 20 no.9:53-57 '64. (MIRA 18:1)

USSR/Azerbaijan Light Industry 4401. Dec 1947

"The Light Industry of Azerbaijan, N. K. Agayev, Minister of Light Industry of Azerbaijan SSR, 1st Pt "Leg Prom" Vol VII, No 12

Surveys development of subject industry since Revolution. New footwear factory imeni Mikoyan in Baku constructed on foundations of similar plant evacuated from Rostov. Production exceeded plan by over one million rubles and labor efficiency, by 5% in 1946. Completed 1947 plan exceeded actual 1946 production in hosiery by 58%, knitted underwear 50%, footwear 40%, chrome leather goods 46%, coarse leather goods 25%, and plastic leather 29%. Two mechanical ID

19047

USSR/Azerbaijan Light Industry 4401. Dec 1947 (Contd)

conveyers assembled and functioning in clothing factory imeni Volodarskiy in 1947; and 140 automatic machines including dryer added to Azerbaijan Knitwear Combine. Contributions of leading workers noted. Total savings in footwear estimated. New methods incorporated in Leather Plants No 1 and 2. Prospective increases in Light Industry of Azerbaijan by 1950.

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19849-65

AC. FSCION NR: AR4048153

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arrest in the presence of an appropriately selected potential difference between the polarizable steel electrodes permits an evaluation of the changes in the protective effect under various conditions, the time course of the formation of a protective film and its removal after removal. Protective films on steel in a mixture of hydrocarbons and aqueous solutions have no significant effect on the ohmic resistance of the external link in the corrosion macrocouple. The film obtained in the presence of a hydrocarbon was found to have a significant protective effect, as measured by the strength of the polarizing current for 24 hours after removal of the inhibitor solution. N. Popova.

SUB CODE: MM, FP

ENCL: 00

19849-65 01A(S)-02/ENI(S)/AFF(0)/000100510015-8/T/ENP(t)/ENP(b)

AC. FSCION NR: AR4048153

S/0081/64/000/011/K017/K017

SOURCE: Ref. zh. Khimiya Abs. 11K:15

AUTHOR: Negreyev, V. F., Abramov, D. M., Agayev, N. M.

I

OFFICE SOURCE: Gaz. delo. Nauchno-tekhn. slovar. 1963. 28:31

TOPIC TAGS: steel, steel corrosion, corrosion inhibitor, hydrocarbon, salt water, petroleum refining, electrochemistry, quaternary ammonium salt, polarizing current, protective film, katapin A

TRANSLATION: Katapin A (a quaternary ammonium chloride salt) was studied for possible use as a corrosion inhibitor in the petroleum refining industry. The effectiveness and character of the formation of protective films were studied during the use of this corrosion inhibitor in a mixture of an aqueous NaCl solution and kerosene with or without the presence of H<sub>2</sub>S. Since the corrosion of steel in a system consisting of hydrocarbons and an aqueous solution is an electrochemical process, it was studied by electrical methods. The study of the effectiveness of inhibitors on the basis of the density of the polarizing

ABRAMOV, D.M.; ZEYNALOV, S.D ; AGAYEV, N.M.

Electrochemical method for determining the efficiency of corrosion inhibitors for steel in the production of gas-condensate wells. Gaz. delo no.1:22-25 '65.

(MIRA 18:6)

1. Institut khimii AN AzSSR.

AGAJEV, N.M., inž. [Agayev, N.M.] (Baku, SSSR)

Thread cutting on tubes with circular knives with double-angle  
of inclination. Stroĭ vyr 11 no.7:358 '63.

AGAJEV, N.M., inz. [Agayev, N.M.] (born, USSR)

Thread cutting on the 9 B 143 machines with small number of disk tools. Stroj vyr 11 no.10:513 0 '63.

AGAJEV N. M. [Agayev, N. M.], inz. (Baku, SSSR)

Cutting threads on drill pipes. Strojirenstvi 13 no.  
13: 928-933 D '63.

L 43927-00 EWIM/EWPI/TI/EWPI(t)/ETI IJP(c) JD/WI/WB/DJ/RM

ACC NR: AP6028572

(N)

SOURCE CODE: UR/0316/66/000/003/0017/0020

AUTHOR: Kuliyev, A. M.; Sardarova, S. A.; Agayev, N. M.

B42  
4D

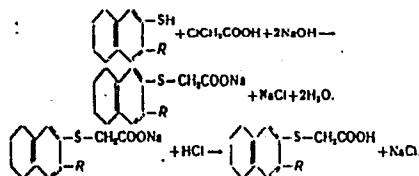
ORG: Institute of the Chemistry of Additives, AN AzerbSSR (Institut khimii prisadok AN AzerbSSR)

TITLE: Synthesis of [(alkyltetralyl)thio]acetic acids and study of their inhibition of steel corrosion

SOURCE: Azerbaydzhanskiy khimicheskiy zhurnal, no. 3, 1966, 17-20

TOPIC TAGS: ~~alkyltetralylthioacetic acid~~, synthesis, surface active substance, steel corrosion, corrosion inhibitor

ABSTRACT: Four (tetralylthio)acetic acids have been synthesized from the tetralinethiols and chloroacetic acid in the presence of alkalis:



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ACC NR: AP6028572

where R is H; C<sub>3</sub>H<sub>7</sub>; C<sub>5</sub>H<sub>11</sub>; C<sub>6</sub>H<sub>13</sub>. The inhibiting effect of the synthesized acids on the corrosion of ST-3 steel was studied at 20C in tests lasting up to 10 hr. The experiments were conducted in a stream of a mixture of petroleum and 3% aqueous sodium chloride solution (1/10 vol ratio) saturated with hydrogen sulfide; 50, 100 or 200 mg/l of the inhibitors were used. The acids were shown to slow down the corrosion rate of steel by 52% (when R is H) to 80.5% (when R is C<sub>3</sub>H<sub>7</sub>; C<sub>5</sub>H<sub>11</sub>; C<sub>6</sub>H<sub>13</sub>), and to reduce this rate in 10 hr tests from 5.9 to 2.8-1.2 g/m<sup>2</sup>·hr. Orig. art. has: 2 tables. 2

[BO]

SUB CODE: 07, 13/ SUBM DATE: 01Feb66/ ORIG REF: 004/ OTH REF: 002/ ATD PRESS:

5060

Card

212 *egk*

ACC NR: AP6025825 (N) IJP(c) JD/WW/WB/RM SOURCE CODE: UR/0316/66/000/001/0094/0098

AUTHOR: Negreyev, V. F.; Agayev, N. M.

ORG: AGU im. S. M. Kirova; Institute of Inorganic and Physical Chemistry, AN AzerbSSR  
(In-t neorgan. i fiz. khimii AN AzerbSSR)

TITLE: Potentiostatic method of examining the effectiveness of corrosion inhibitors

SOURCE: Azerbaydzhanskiy khimicheskiy zhurnal, no. 1, 1966, 94-98

TOPIC TAGS: corrosion inhibitor, corrosion, corrosion resistance, anticorrosive additive, sea water corrosion

ABSTRACT: The effectiveness of water and hydrocarbon soluble corrosion inhibitors (diaminedioleate, calcium salt of sour tar--a by-product of oil additives SB-3, Pb 8/2M, A, and 2, and imported inhibitors--primary and secondary amines) was examined by the potentiostatic method. The inhibitor concentration was varied in the 100-600 mg/l range. Polarization resistance was measured (at 20°C) as a function of time (15-90 min) for steel samples immersed in a mixture of benzene and 3% aqueous NaCl solution containing 10<sup>-2</sup> mol of hydrogen sulfide per 1000 ml (volume ratio 1:1). The steel samples were subjected to a constant anodic current of 0.025 mA/cm<sup>2</sup>. In all experiments, the potential difference was of the order of up to 100 mv and it was measured using a potentiometer with a measurement accuracy of 2-3 mv. It was concluded

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ACC NR: AP6025825

that the potentiostatic method may be utilized in assessing the anticorrosive effectiveness of the inhibitors in media composed of water and liquid hydrocarbons. All inhibitors tested were found to increase the potentiostatic resistance of steel by a factor of at least five in comparison with the uninhibited systems. The highest inhibition effectiveness for steel exhibited diamminediolate; when used in concentration of 600 mg/l its inhibition effectiveness was found to be practically time independent. Orig. art. has: 3 figures.

SUB CODE: 07/

SUBM DATE: 05May65/

OTH REF: 002

Card 2/2 *Adh*

ROGACHEVSKAYA, Z.M.; AGEYEV, N.V., red.; MOSKVINA, R.Ya., red.

[Constitutional diagrams of metallic systems published in 1962] Diagrammy sostoiianiia metallicheskih sistem, opublikovannye v 1962 godu. Moskva, Proizvodstvenno-izdat. kombina: VINITI. No.8. 1964. 231 p.  
(MIRA 13:1)

L 42135-66 EWI(m)/EWP(w)/I/EWP(t)/ETI/EWP(k)

IJP(c) JD/HW/JG

ACC NR: AP6027744

SOURCE CODE: UR/0370/66/000/004/0084/0089

AUTHOR: Ageyev, N. V. (Moscow); Babareko, A. A. (Moscow); Chuprikov, G. Ye. (Moscow); Bokareva, N. N.

ORG: none

TITLE: Mechanism of the plastic deformation of differently oriented molybdenum single crystals under tension

SOURCE: AN SSSR. Izvestiya. Metally, no. 4, 1966, 84-89

TOPIC TAGS: molybdenum, single crystal, ~~single~~ crystal structure, ~~single crystal~~ plastic deformation

ABSTRACT: A series of variously oriented molybdenum single crystals, 4 mm in diameter and 80-100 mm long, were stretched at a rate of about 1 mm/min. A strong dependence of mechanical properties on the orientation of crystals was observed. Crystals with the axis oriented in the region bounded by [012], [011], [111], and [112] exhibited a high ductility and deformed with multiple necking with a total elongation of 1.5-7%. Crystals with the axis oriented in the region bounded by [012], [112], and [001] had a low ductility and failed in a brittle manner by a cleavage along the plane of the cube with 1-2% elongation. In the group of ductile crystals, those with the axis oriented close

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UDC: 669.28-172

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AGAYEV, O., inzh.; VLASOV, V., inzh.; TITKIN, V., inzh.

How to clean the oil and cooling systems of Diesel engines.

Prof.-tekh. obr. 20 no.6s22 Je '63.

(MIRA 16:7)

1. Tsentral'nyy uchebno-metodicheskiy kabinet professional'no-  
tehnicheskikh uchilishch.

(Diesel engines--Maintenance and repair)

AGAYEV, R.K.

Collecting and preparing oil and gas samples for purpose of  
analysis. Trudy Azerb. ind. inst. no.16:61-73 '57. (MIRA 11:9)  
(Petroleum--Analysis) (Gas, Natural--Analysis)

AGAYEV, R.K.

Method for studying properties of formation oil and gas [in Azerbaijani with summary in Russian]. Azerb. neft. khoz. 37 no.3: 22-25 Mr '58. (MIRA 11:8)

(Petroleum engineering)



AGAYEV, R. K.: Master Tech Sci (diss) -- "Problems of examining the properties of oil and gas under mine conditions with dissolved gas". Baku, 1959. 13 pp (Min Higher Educ USSR, Azerb Order of Labor Red Banner Industrial Inst im M. Azizbekov), 150 copies (KL, No 12, 1959, 128)

AGAYEV, B. K.

Studying the properties of reservoir oil and gas in dissolved-gas pools. Azerb. neft. khoz. 39 no.6:19-22 Je '60. (MIRA 13:10)  
(Oil fields--Production methods)

AGAYEV, R.K. [deceased]; AKHMEDOV, Z.M.

Effect of gas overflow between interlayers on the change in  
the productivity factor in time. Izv.vys.ucheb.zav.; neft'  
i gaz 7 no. 1:39-42 '64. (MIRA 17:7)

1. Azerbaydzhanskiy institut nefti i khimii imeni M.Azizbekova.

15-57-5-7029

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 5,  
p 184 (USSR)

AUTHORS: Zalkin, S. L., Agayev, S. I., Alifanov, I. N.

TITLE: Triple-Hole Oil Well Drilling (Trehstvol'noye  
bureniye neftyanykh skvazhin)

PERIODICAL: Novosti neft. tekhn. Neftepromysl. delo, 1955, Nr 7,  
pp 2-8

ABSTRACT: A group of three wells may be drilled simultaneously  
by one drilling crew with one drill rig. Standard  
equipment includes the UZ-4-3 winch, three U8-3 pumps,  
the MAP-138-8 and FAMSO (380 kw) electric motors, and  
two sets of 5-inch drill pipes. Special equipment  
includes the VMB-150 derrick, the UMB-3 sliding crown  
block with the control panel at the driller's post,  
three RMB-560 rotors, two MU-2 control gears, and the  
DMP-1 and ZMP-2 feeding mechanisms. The triple-hole

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Triple-Hole Oil Well Drilling (Cont.)

15-57-5-7029

method permits combining three basic operating processes: 1) automatic drilling without a compound pulley system in one well; 2) the raising of the second group of drill pipes from the second well; 3) the lowering of these pipes into the third well. Working tests have shown that triple-hole drilling increases production of the drill crew and reduces the volume of preliminary operations. It thus reduces the cost of well drilling.

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M. G. M.

AGAYEV, Sh.M.; KISIN, I.M.

Water equivalent of the snow cover of Azerbaijan and its role  
in the flow of rivers. Trudy TbilNIGMI no.13:67-71 '63.  
(MIRA 18:8)

1. Upravleniye gidrometeorologicheskoy sluzhby Azerbaydzhanskoy  
SSR.

KERIMOV, Sh. B.; KISIN, I. M.; AGAYEV, Sh. M.

Distribution of atmospheric precipitation in the Kishbay  
basin based on the data of total precipitation gauges. Uch.  
zap. AGU. Geol.-geog. ser. no.1:71-78 '62.

(MIRA 16:1)

(Kishchay Valley--Precipitation(Meteorology))

3(7) <sup>p. 2</sup>

AUTHOR:

Khmaladze, G. N.

SOV/50-59-4 20/21

TITLE:

Snow Surveys in the Mountains of the Caucasus  
(O snegosnyemkakh v gorakh Kavkaza)

PERIODICAL:

Meteorologiya i gidrologiya, 1959, Nr 4, p 77 (USSR)

ABSTRACT:

In the resolutions of the Vtoroye Vsesoyuznoye soveshchaniye po izucheniyu snezhnogo pokrova v gorakh (Second All-Union Conference on the Study of the Snow Cover in the Mountains), which took place in Tbilisi in October 1956, meetings of snow surveyors were alternately provided for in Tbilisi, Baku and Yerevan. According to these resolutions, the Tbilisskiy nauchno-issledovatel'skiy gidrometeorologicheskiy institut (TNIGMI) (Tbilisi Hydrometeorological Scientific Research Institute) organized such a meeting in 1957. On December 18-20, 1958, such a meeting was organized by the TNIGMI in Yerevan. Besides experts of the UGMS (Hydrometeorological Service Administration), also representatives of the Akademiya nauk Armyanskoy SSR (Academy of Sciences of the Armyanskaya SSR), of the Armgidep and the Geograficheskoye obshchestvo Armyanskoy SSR (Geographic Society of the Armyanskaya SSR), attended this meeting. An exhibition of the works by the snow-surveying squads

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Snow Surveys in the Mountains of the Caucasus

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of the UGMS of the 3 Transcaucasian Republics was installed in the meeting room. At the end of the meeting, a short film entitled "Snow Surveys in the Mountains" was shown. The film was made by I. Kisin and Sh. Agayev, co-workers of the UGMS of the Azerbaydzhanskaya SSR, under the direction of V. S. Vlasova. G. N. Khmaladze, Chief of the Department of Hydrological Investigations and Forecasts, opened the meeting with a report of information. He spoke on the state of snow surveying and glacier research work to be carried out in 1959 by the UGMS and TNIGMI. Reports were then delivered by the directors and experts of the UGMS of the Azerbaydzhanskaya SSR (Sh. Agayev), of the Armyanskaya SSR (A. Pogosyan) and of the Gruzinskaya SSR (V. Palavandishvili). They reported on the state of the indoor service and field work for snow surveys in the mountains, on investigations of snow avalanches and glaciers, as well as on observations in 1958 of the snow cover in the mountains. -I. Kisin reported on glacier investigations in the mountains of Azerbaydzhan and Dagestan. -V. Sh. Tsomaya put forward the results of investigations on the correlation between route snow surveys and stationary observations, as well as formulas for the calculation of water reserves in snow according to the quantity of precipitations

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Snow Surveys in the Mountains of the Caucasus

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in winter measured with the rain gauge. He reported on the state of glacier investigations in the Caucasus. G. N. Khmaladze reported on the work of the TRIGMI on the subject of snow avalanches, and gave a survey of avalanche slips in the various regions of the Great and Little Caucasus from 1933 to 1955.-  
A. A. Pogosyan reported on his determination of the water reserves in snow at an altitude of 1800-2400 m.

Card 3/3

BABADZHANYAN, O.K., saveduyushchiy; AGAYEV, Sh.D., glavnyy vrach.

Roentgenological changes in the osseous system in hemolytic anemia. Vest.  
rent.1 rad. no.3:45-46 My-Je '53. (MLRA 6:8)

1. Rentgenovskoye otdeleniye polikliniki sanitarnogo upravleniya Minister-  
stva zdavookhraneniya Azerbaydzhanskoy SSR (for Babadzhanyan). 2. Poli-  
klinika sanitarnogo upravleniya Ministerstva zdavookhraneniya Azerbayd-  
zhanskoy SSR (for Agayev). (Anemia)

AGAYEV, Sh.M.

Reconstructing a solid-fuel water heater to operate on liquid  
gas fuel. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol.  
nauk no.4:114-116 '61. (MIRA 14:12)

1. Institut ekonomiki AN Turkmenskoy SSR.  
(Water heaters)

AGAYEV, Sh.M.

Snow cover in the Daghestan A.S.S.R. Trudy Tbil.NIGMI no.9:52-58  
'61. (MIRA 15:3)

1. Upravleniye gidrometeorologicheskoy sluzhby Azerbaydzhanskoy  
SSR.

(Daghestan—Snow surveys)

AGAYEV, Sh.M.; STEPANOV, I.N.

Chemical composition of atmospheric precipitation in Azerbaijan. Dokl.  
AN SSSR 154 no.6:1359-1360 F '64. (MIRA 17:2)

1. Upravleniye gidrometeorologicheskoy sluzhby AzerbSSR.

STEPANOV, I.N.; AGAYEV, Sh.M.

System of hydrochemical zoning of the snow cover in Azerbaijan.  
Za tekhn. prog. 3 no.7:38-41 JI. '63. (MIRA 16:12)

1. Azerbaydzhanskiy gosudarstvennyy institut po proyektirovaniyu  
vodokhozyaystvennogo stroitel'stva (for Stepanov). 2. Upravleniye  
gidrometallurgicheskoy sluzhby Azerbaydzhanskoy SSR (for Agayev).

AGAYEV, Sh.M.

Vertical zonality in the distribution of atmospheric precipitation in the basin of the Kishchay River according to data of total precipitation gauges. Trudy Tbilnitski no.13(60-63 '63). (MIRA 18:2)

1. Upravleniye gidrometeorologicheskoy sluzhby Azerbaydzhanskoy SSR.



ALTYEV, Sh.M.; AGAYEV, T.Ye.

Determining the value of a strip of material using a monogram,  
lev. vys. zavr.; neft' i gaz 7 no.6:44, 58 '64.

(MIRA 17:9)

1. Azorbaydzhanakiy institut nefti i khimii imeni Azizbekova,  
Zaved. imeni leyf. Shaidin.

AGAYEV, U.Ah.  
Studying the reaction of cyclohexane chlorination. Izv.AN Azerb.SSR  
no.6:53-64 Je '57. (MIRA 10:10)  
(Cyclohexane) (Chlorination)

AGAYEV, U. Kh.: Master Chem Sci (diss) -- "Chlorination of cyclohexane hydrocarbons". Baku, 1958, published by AGU. 17 pp (Acad Sci Azerb SSR, Inst of Oil), 100 copies (KL, No 6, 1959, 125)

MEKHTIYEV, S.D.; ALIYEV, A.F.; AGAYEV, U.Kh.

Investigation of the chlorination of cyclohexane hydrocarbons  
[in Azerbaijani with summary in Russian]. Izv. AN Azerb. SSR.  
Ser. fiz.-tekh. i khim. nauk no.5:67-73 '58. (MIRA 12:1)  
(Chlorination) (Cyclohexane)

MEKHTIYEV, S.D.; ISMAILZADE, I.G.; ALIYEV, A.F.; AGAYEV, U.Kh.; MAMEDOV, F.A.

Structure of 1-chloromethylcyclohexane isomers and the  
composition of products of the photochemical monochlorination  
of methylcyclohexane. Dokl. AN Azerb. SSR 14 no.12:985-990  
'58. . (MIRA 12:1)

1. Institut nefti AN Azerb. SSR.  
(Cyclohexane)

MEKHTIYEV, S.D.; KAMBAROV, Yu.G.; AGAYEV, U.Kh.

Study of the extra rapid pyrolysis of fractions of the  
Karadag gas condensate and of some individual paraffinic  
hydrocarbons. Azerb. khim.zhur. no.4:59-70 '59. (MIRA 14:9)  
(Karadag--Condensate oil wells)  
(Paraffins)

MEKHTIYEV, S.D.; AGAYEV, U.Kh.; AKHMEDOV, S.M.; SULEYMANOVA, E.T.

Photochemical chlorination of aromatic hydrocarbons and  
dehydrochlorination of their dichlorosubstituted derivatives.  
Azerb.khim.zhur. no.2:17-24 '61. (MIRA 14:8)  
(Hydrocarbons) (Chlorination)

ALIYEV, A.F.; MEKHTIYEV, S.D.; AGAYEV, U.Kh.

Studying the chlorination reaction of cyclohexane hydrocarbons:  
Synthesis of individual monochlor substitution products of  
dimethylcyclohexanes. Dokl.AN Azerb.SSR 17 no.4:283-287 '61.  
(MIRA 14:6)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.  
(Cyclohexane)



MEKHTIYEV, S.D.; ALIYEV, A.F.; AGAYEV, U.F.

Reaction of the chlorination of cyclohexane hydrocarbons. Dokl.  
AN Azerb.SSR 17 no.7:579-583 '61. (MIRA 14:10)

1. Institut neftekhimicheskikh protsessov AN AzerSSR.  
(Chlorination) (Hydrocarbons)

S/081/63/000/003/018/036,  
B144/B186

AUTHORS: Mekhtiyev, S. D., Aliyev, A. F., Kambarov, Yu. G.,  
Agayev, U. Kh.

TITLE: Study of catalytic chlorination of some cyclohexane hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1963, 427, abstract 3N18 (Azerb. khim. zh., no. 2, 1962, 19-23 [Summary in Azerb.] )

TEXT: Catalytic chlorination was studied in methyl (I), ethyl (II), isopropyl (III), cis-o-dimethyl (IV), and trans-p-dimethyl (V) cyclohexane in the presence of catalysts; these were: pumice treated with 5% HCl, AlCl<sub>3</sub>, and tungsten chlorides applied to the pumice. The reacting vessel is a tube of molybdenum glass 20 mm in diameter and 750 mm in length. To obtain monochlorides, a large excess of hydrocarbons is used. With a molar ratio hydrocarbon : Cl<sub>2</sub> of 3.2 - 3.4 : 1 and a hydrocarbon feeding rate of 1.2 g/min, the conversion into the  
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Study of catalytic chlorination of ...

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chloride of I, II, and III on pumice varies between 12 and 20%, with a maximum degree of conversion of 30%. An increase in the temperature from 90 to 150°C has in the case of chlorination of I no significant effect on the degree of hydrocarbon conversion nor on the formation of monochloride. The same is observed in the chlorination of II at 120 and 150°C and of III at 120, 150 and 170°C. This apparent absence of a temperature effect on the degree of hydrocarbon conversion is explained by the fact that at those elevated temperatures at which the hydrocarbon exists in vapor phase, the time during which the products are in the reaction zone is markedly shorter. Under identical conditions, the formation of the monochloride related to the hydrocarbon converted decreases in the order I > II > III. Chlorination of I and II in the presence of  $AlCl_3$  applied to the pumice at 120°C, and with a hydrocarbon feeding rate of 1.7 g/min with different component ratios, shows that this catalyst is more active than pure pumice. In this case, the yields of monochlorides decrease markedly; this is due to the intensification of the reaction of advanced chlorination of hydrocarbons under the effect of  $AlCl_3$ . An increase in the molar ratio

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Study of catalytic chlorination of ...

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hydrocarbon :  $\text{Cl}_2$  slightly enhances the yield of monochloride in the chlorination of I, and more noticeably in the chlorination of II. Chlorination of I - V in the presence of tungsten chlorides applied to the pumice, at  $120^\circ\text{C}$ , a hydrocarbon feeding rate of 1.7 g/min, and a hydrocarbon :  $\text{Cl}_2$  ratio of 3.2 - 3.6 effects 12 - 15% conversion of hydrocarbons into chlorides with a maximum conversion of 30% and a yield of monochlorides of 52-59% of the theoretical value (related to the hydrocarbons converted), with the exception of III, for which the monochloride yield is 46-47%. Of the catalysts studied, tungsten chlorides have the most favorable effect on the formation of monochlorides. The constants of the monochlorides separated are indicated (the enumeration comprises: relevant cyclohexane, b. p. in  $^\circ\text{C}/20$  mm,  $n_D^{20}$ ,  $d_4^{20}$ ):

I, 52 - 60, 1.459 - 1.460, 0.975 - 0.978; II, 76 - 80, 1.466 - 1.467, 0.967 - 0.968; III, 79 - 84, 1.467 - 1.472, 0.972 - 0.974; IV, 70 - 74, 1.462 - 1.469, 0.957 - 0.961; V, 69 - 73, 1.457 - 1.463, 0.956 - 0.961.

It is concluded that photochemical chlorination is to be preferred to catalytic chlorination with regard to the degree of hydrocarbon conversion as well as to the yields of monochlorides. Moreover, catalytic

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Study of catalytic chlorination of ...

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chlorination is stated to be easier from a technical point of view.  
[Abstracter's note: Complete translation.]

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MEKHTIYEV, S.D.; MAMEDOV, F.A.; ISMAILZADE, I.G.; ALIYEV, S.F.; AGAYEV, U.Kh.

Conformation of molecules of some monochloro-substituted  
alkylcyclohexanes and their mixtures. Azerb. khim. zhur.  
no.5:73-79 '64. (MIRA 18:3)

AGAYEV, V., inz, [Agayev, V.] (Baku, SSSR)

Thread cutting on the Progress Cri-dan TT14 machine.  
Stroj vyr ll no.5:261 My '63.

AGAYEV, Ya.; HASLEDOV, D.H.

Studying the electric properties of the system AlSb-InSb.  
Izv.An Turk.SSR. no.3:3-9 '59. (MIRA 12:11)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR.  
(Antimony compounds--Electric properties)



HBAYE 11

81888  
S/181/60/002/05/07/041  
B008/B058

24.7700

AUTHORS: Agayev, Ya., Nasledov, D. N.

TITLE: Some Electric Properties of the AlSb-InSb System

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 5, pp. 826-829

TEXT: The investigation of some electric properties of solid solutions of the AlSb-InSb system was the aim of the paper under review, the Hall effect, the electrical conductivity, and the change of the resistance in the transverse magnetic field having been investigated in a wide temperature range. The temperature dependence of the specific electrical conductivity  $\sigma$  and of the Hall constant R is shown in Fig. 1 for three compositions (Table) of the AlSb-InSb system. The authors investigated also the dependence of the Hall constant on the magnetic field strength H and the change of the resistance as dependent on H and the temperature. The curves 1-3 in the diagrams are related to the samples 9InSb.AlSb, 7.5InSb.2.5AlSb, and InSb.AlSb with the forbidden zone widths  $\Delta E = 0.34, 0.43, \text{ and } 0.82$ . The function  $\Delta\epsilon/\epsilon_0 = f(H)$ , which is not shown here, is quadratic at first, becomes linear with increasing H, and  $\Delta\epsilon/\epsilon_0$  finally tends toward saturation

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Some Electric Properties of the AlSb-InSb  
System

S/181/60/002/05/07/041  
B008/B058

in the presence of very strong transverse magnetic fields. The temperature dependence of  $\Delta q/\Delta q_0$  is given in Fig. 2, the measurements having been carried out in a field of 5,000 oe.  $\Delta q/q_0$  is very small (low mobility of the holes) at low temperatures, then it increases steeply and reaches a peak which shifts toward higher temperatures with a higher AlSb content of the samples.  $\Delta q/q_0$  then decreases again. The  $\Delta E$  values computed from  $R(T)$  agree well with those computed from  $\sigma(T)$ . The carrier concentration of the samples at the temperature of liquid nitrogen was found to be  $5.6 \cdot 10^{16} - 5 \cdot 10^{17} \text{cm}^{-3}$ . Numerical data are given for the mobility of the carriers and their concentration. The authors thank B. V. Baranov and N. A. Goryunova for the synthesis and supply of the materials investigated. There are 2 figures, 1 table, and 5 references: 3 Soviet and 2 German.

ASSOCIATION: Fiziko-tehnicheskiy institut AN SSSR, Leningrad  
(Institute of Physics and Technology AS USSR Leningrad) LH

SUBMITTED: September 23, 1959

Card 2/2

AGAYEV, Ya. Cand Phys-Math Sci -- (diss) "Electrical properties of solid solutions of the system InSb-AlSb." Ashkhabad, 1960, 8 pp, (Physicotechnical Inst of Acad Sci Turkmen SSR), 200 copies, (KL, 31-60, 140)

23488  
S/165/60/000/002/004/008  
A104/A129

24,7700 (1160,1144,1137)  
AUTHOR: Agayev, Ya.

TITLE: On the electric properties of the AlSb - InSb system

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-  
tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 2,  
1960, 96 - 100

TEXT: Technical potentials of recently developed semiconductor mate-  
rials, i.e., compounds based on the 3rd and 5th group of the Mendeleev ta-  
ble (AlSb, InSb etc.) are reviewed. The purpose of this investigation, car-  
ried out in cooperation with Professor D.N. Nasledov, N.A. Goryunova, and  
B.V. Baranov, was the study of some electric properties of the solid solu-  
tion of the AlSb - InSb system. Preliminary results were published in Refs.  
1 and 2, by Agayev, Ya., Issledovaniye nekotorykh elektricheskikh svoystv  
sistemy AlSb - InSb, Izvestiya AN TSSR, 1959, no. 3, and Nekotoryye elek-  
tricheskiye svoystva sistemy AlSb - InSb, FTT. Samples were subjected to  
thermal processing, tempering and annealing in order to achieve highest

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S/165/60/000/002/004/008  
A104/A129

On the electric properties ...

possible homogenization, which was determined by microstructural and X-ray analysis. The amount of admixtures in the initial substances Al, In, Sb, did not exceed 0,005%. Synthesis was carried out in graphite crucibles which were placed in quartz ampoules filled with spectrally pure argon. Blending of the initial components was ensured by holding them in a vibrating ampoule for one hour at 1,100°C followed by immersion in a salt solution. Annealing was carried out in unsoldered, argon-filled ampoules at temperatures of 540-600°C for 120-700 hours. Electroconductivity, Hall effect and resistance variations in the transverse magnetic field at 80-1,000k of five compounds of the system AlSb - InSb were checked. Fig. 1 shows the dependence of the specific electroconductivity on temperature in the following systems: 9 InSb·AlSb; 7,5 InSb·2,5 AlSb; 6 InSb·4 AlSb; InSb·AlSb; 2,5 InSb·7,5 AlSb. Rapid increase in the electroconductivity of compounds 1 and 2 at high temperatures is caused by the transition to selfconductivity. Reduced electroconductivity of other compounds at increased temperatures is caused by the reduced mobility of the current carriers. The conductivity factor of all compounds varies between  $1 \div 10 \text{ ohm}^{-1} \text{ cm}^{-1}$  at normal temperatures. The dependence of the width of the forbidden zone  $\Delta E$  on the compo-

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On the electric properties ...

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A104/A129

sition of AlSb - InSb is shown in Fig. 2 and the temperature dependence of the Hall coefficient in compositions 4 and 5 in Fig.3. The latter was measured at a constant magnetic field of 7,200 oersted. Due to the low mobility of holes the effect of resistance variation in the magnetic field of groups 3 and 5 is negligible. As stated the dependence of  $R$ ,  $\rho$  and  $\Delta\rho/\rho_0$  on the absolute temperature is similar to the dependence of some A<sup>III</sup> and BV compounds. The mobility of the holes of groups 1-5 in liquid nitrogen were 80, 70, 40, 30 and 20 cm<sup>2</sup>/sec. The mobility of electrons in the selfconductivity region decreases correspondingly to temperature drops in accordance with the law  $T^{-\alpha}$ . Exponent  $\alpha$  was also determined based on the dependence of  $\Delta\rho/\rho_0$  on the temperature in proper region according to correlation

$$\alpha = - \frac{1}{2} \frac{\Delta \lg \frac{\Delta \rho}{\rho_0}}{\Delta \lg T}$$

The values 1.4 for compound 1, 2.0 for compound 2, and 1.3 for compound 4 are close to the values obtained from the Hall and the conductivity effect.

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On the electric properties ...

The fact that in compound 5 the Hall coefficient drops nearly to zero whereas the sign remains unchanged indicates the equal mobility of holes and electrons. The mobility relation of electrons and holes  $b$  of compounds 1 and 2 were determined according to formula

$$\frac{R_{\text{max}}}{R_{\text{tr}}} = \frac{(b - 1)^2}{4b}$$

[Abstracter's note: designation tr (true) is a translation from the Russian ist (istinnaya)]. The value  $b$  is 20 for compound 1 and 18 for compound 2. By relation

$$b = \frac{\mu_n}{\mu_p} = \frac{c^2}{c_2^2} \left( \frac{m_p}{m_n} \right)^{5/2}$$

in which  $m_p$  = effective mass of holes and  $m_n$  = effective mass of electrons, the relation between the effective mass of current carriers of two composi-

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S/165/60/000/002/004/008  
A104/A129

tions ( $c_1$  equal  $c_2$ )

$$\frac{m_p}{m_n} = 3.4 \text{ for composition 1 and } \frac{m_p}{m_n} = 3.2 \text{ for composition 2.}$$

The concentration of selfcarriers was determined according to formula

$$n_i = 2 \left( \frac{2\pi \sqrt{m_n \cdot m_p} kT}{h^2} \right)^{3/2} \cdot e^{-\frac{\Delta E}{2kT}}$$

Compounds 3, 4 and 5 revealed a decrease of the Hall coefficient at low temperatures which indicated the presence of non-ionized admixture centers. The width of the forbidden zone  $\Delta E$  can be determined with the help of  $n_i^{2/3}$ . Obtained values of  $\Delta E$  for the compounds 1, 2, 4, and 5 coincide well with  $\Delta E$ , determined by the dependence of the conductivity on temperature. The current carrier concentrations of compounds 1-5 at the temperature of liquid nitrogen were: 1)  $5.75 \cdot 10^{17} \text{ cm}^{-3}$ ; 2)  $8.2 \cdot 10^{17} \text{ cm}^{-3}$ ; 3)  $2.04 \cdot 10^{17} \text{ cm}^{-3}$ ; 4)  $8.55 \cdot 10^{16} \text{ cm}^{-3}$ ; 5)  $8.1 \cdot 10^{16} \text{ cm}^{-3}$ . Fig.6 shows the

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A104/A129

On the electric properties ...

dependence of electroconductivity  $\sigma_j$  on the composition at  $T = 800^\circ\text{K}$  in the selfconductivity region. There are 6 figures, 1 table and 7 references: 5 Soviet-bloc, and 2 non-Soviet-bloc.

ASSOCIATION: Fiziko-tehnicheskiy institut Akademii nauk Turkmenskoy SSR (Physical Technical Institute of the Academy of Science of the Turkmenkaya SSR) and the Fiziko-tehnicheskiy institut Akademii nauk SSR (Physical Technical Institute of the AS USSR) X

SUBMITTED: January 15, 1960

Card 6/10

89286

S/181/61/003/001/025/042  
B006/B056

24.7600 (1043, 1158, 1160)

AUTHORS: Agayev, Ya., Yemel'yanenko, O. V., and Nasledov, D. N.

TITLE: Investigation of the thermomagnetic Nernst-Ettingshausen effects in solid solutions of the InSb-AlSb system

PERIODICAL: Fizika tverdogo tela, v. 3, no. 1. 1961, 194-197

TEXT: Already in earlier papers (Refs. 1-3) the authors reported on studies made of the InSb-AlSb system; the first component is characterized by high carrier mobility, the second by a broad forbidden band. Electrical conductivity, Hall effect and change in resistance in a transverse magnetic field have already been studied; studies of this system were continued, and form the subject of the present report. The principal aim of further investigations was to explain the scattering mechanism of carriers in solid solutions (by means of the Nernst-Ettingshausen effect), and to obtain more exact data on carrier mobility. The measuring method is described in Ref. 4. Fig. 1 shows the temperature dependence of the transverse Nernst-Ettingshausen effect ( $Q_{\perp}$ ) on the basis of several compositions. In the impurity region, the specimens had hole-type conductivity; at room

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Investigation of the thermomagnetic...

temperature the hole concentration of specimens 1 (InSb) was  $3 \cdot 10^{15} \text{ cm}^{-3}$ , and that of 2-4 was about  $3 \cdot 10^{17} \text{ cm}^{-3}$  (2: InSb·AlSb, 3: 2.5InSb·7.5AlSb, 4: AlSb). Measurements were carried out in magnetic fields of 7000 oe, specimen 1 at 1200 oe; (weak fields,  $\mu H/c \ll 1$ ). The negative sign of the N-E effect in specimens 2-4 at low temperatures indicates that the carriers are scattered on impurity ions, as is natural for semiconductors of the  $A^{III}B^V$  group. Also the nature of the temperature dependence of the Hall effect is in agreement with this fact. At low temperatures, InSb has a positive  $Q^{\perp}$ , which indicates that the carriers are scattered on acoustic lattice vibrations. Scattering by impurities is insignificant owing to the high purity of the specimen. Impurity conductivity is conserved in AlSb, and the scattering mechanism may be determined even at high temperatures. At  $T > 350^{\circ}\text{K}$ ,  $Q^{\perp}$  is positive (carrier scattering by acoustic lattice vibrations), but also in the case of InSb the  $Q^{\perp}(T)$  curve becomes positive within the region of intrinsic conductivity. This is possible in spite of the bipolar character of conductivity, because in InSb the electron-to-hole mobility ratio is high, and the forbidden-band width is low. In InSb·AlSb specimens, the part of the  $Q^{\perp}(T)$  curves related to mixed conductivity is

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Investigation of the thermomagnetic...

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B006/B056

shifted toward higher temperatures. In InSb, mixed conductivity begins at about  $140^{\circ}\text{K}$ ; in InSb·AlSb, at about  $280^{\circ}\text{K}$ ; and in the specimen containing 75% AlSb, at  $500-550^{\circ}\text{K}$ ; in AlSb it does not occur at all. This may be explained by the increase in the forbidden-band width in the case of increasing AlSb content. As regards carrier mobility, it was found that in transition from InSb to AlSb hole mobility decreases. On the assumption that at low temperatures in specimens 2-4 only impurity ions act as scattering centers; the hole mobility may be calculated from the N-E effect. At  $110^{\circ}\text{K}$ , 140, 80 and  $30\text{ cm}^2/\text{v}\cdot\text{sec}$  was obtained for specimens 2, 3, and 4. These values are 2-3 times as high as those calculated from Hall effect and conductivity (under the same conditions); however, they appeared to be closer to the true values, because the N-E effect is not disturbed, e.g., by a crystalline structure. In any case, these values may be considered to be limits. Fig. 2 shows the temperature dependence of the longitudinal N-E effect ( $Q^{\parallel}$ ), on InSb (1) and InSb·AlSb (2). The fact that  $Q_{\text{max}}^{\parallel}$  of (1) surpasses  $Q_{\text{max}}^{\parallel}$  of (2) by about 2 orders of magnitude (the same may be observed in the case of  $Q^{\perp}$ ) is explained by the much higher mobility and the much higher mobility ratio. Results show that scattering on the

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B006/B056

disordered structure of InSb-AlSb alloys is low. Carrier mobility may be increased by an increase of purity. There are 2 figures and 6 Soviet-bloc references.

ASSOCIATION: Leningradskiy fiziko-tehnicheskij institut AN SSSR imeni akad. A. F. Ioffe (Leningrad Institute of Physics and Technology AS USSR imeni Academician A. F. Ioffe)

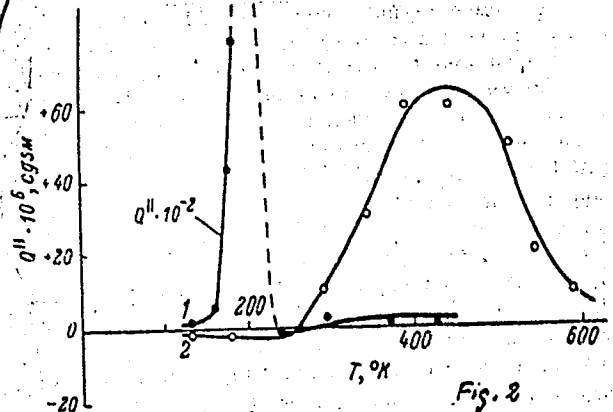
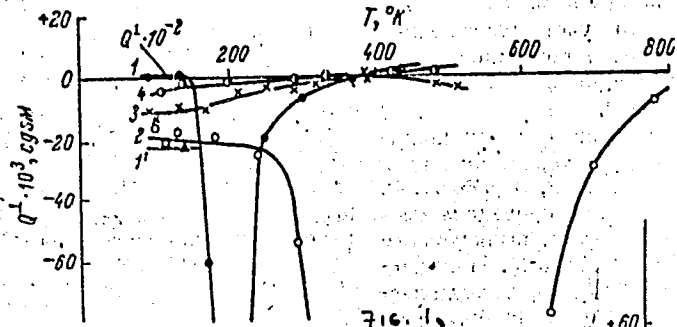
SUBMITTED: June 22, 1960

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S/181/61/003/001/025/042  
B006/B056

Investigation of the thermomagnetic...



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Fig. 2

S/202/62/000/001/003/003  
B117/B101

AUTHOR: Agayev, Ya.

TITLE: All-Union Conference on Semiconducting Compounds

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-  
tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no.1,  
1962, 126

TEXT: This is a short report on the All-Union Conference on Semiconducting Compounds, held at Leningrad from December 18 to 23, 1961. The Conference was organized by the Leningradskiy fiziko-tekhnicheskii institut im. A. F. Ioffe (Leningrad Physicotechnical Institute imeni A. F. Ioffe) and attended by 300 delegates from various cities and republics of the USSR. 115 reports were held on electrophysical and physicochemical methods of growing of single crystals, on the preparation of ultra-pure crystals, and on numerous properties of composite semiconducting compounds. Reports by delegates from Moscow, Leningrad, Union Republics, and oblast', as well as vivid discussions showed that great progress has been made in this field. The great interest in composite semiconductors is due to their many

Card 1/2

26.2532  
AUTHOR: Agayev, Ya. S/202/62/000/003/002/002  
1028/1228  
TITLE: Thermoelectric properties of solid solutions of the InSb-AISb system  
PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 3, 1962, 115-117  
TEXT: The temperature dependence of the differential thermal emf in the compositions InSb . AISb. 2.5 InSb . 7.5 AISb was studied experimentally on homogeneous rectangular specimens of dimensions  $12 \times 3 \times 2 \text{ mm}^3$  —  $15 \times 3 \times 2 \text{ mm}^3$ , fixed between graphite blocks in an argon-filled quartz tube. The specimen could be heated electrically and cooled by immersing in a Dewar flask filled with liquid nitrogen. The temperature was measured by chromel-constantan thermocouples. The position of the Fermi level as a function of the temperature was calculated by the results obtained and the effective mass of the holes was assessed. There are 3 figures. ✓B  
ASSOCIATION: Fiziko-tekhnicheskii institut AN Turkmenskoy SSR (Institute of Physics and Technology, AS Turkmen SSR)  
PRESENTED: February 7, 1962  
Card 1/1



24,7600

42237  
S/202/62/000/005/001/001  
E032/E414

AUTHORS: Agayev, Ya., Ismailov, O.  
TITLE: Simultaneous study of some kinetic effects in the alloy 4InAs·InP

PERIODICAL: Akademiya nauk Turkmenskoy SSR, Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no.5, 1962, 9-14

TEXT: An experimental study is reported of the 4InAs·InP alloy. Fig.1 shows the apparatus employed to measure simultaneously the electrical conductivity  $\sigma$ , the Hall constant  $R$ , the differential thermal emf  $\alpha$  and the longitudinal and transverse Nernst-Ettinghausen constants  $Q^{\perp}$  and  $Q^{\parallel}$ . The specimen 1 was in the form of a rectangular parallelepiped and was kept in position by two graphite blocks 2 and 3 in the special holder 4. A nichrome wire, wound on one of these graphite blocks, served as the heater producing the necessary temperature gradient in the specimen. The heat was removed through the other block. Thermocouples 7 and 7' were inserted through the blocks and thermal contact was ensured by means of the screws 5 and 5'. The electrical contacts  
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Simultaneous study of some ...

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E032/E414

were in the form of platinum wires, 0.05 mm in diameter, spot-welded to the specimen. The entire assembly was placed in a quartz tube which could be evacuated. High temperatures were achieved by means of the demountable electrical furnace 8 which carried a nichrome heater and could be water-cooled from outside, as shown. Low temperatures were achieved by immersing the device into a dewar containing liquid oxygen. In measuring  $\sigma$  and  $R$  the thermocouples served as the current leads. The transverse emf was measured with the Hall probes I-II and III-IV. The longitudinal emf was measured with the same contacts as the thermal emf or with I-III and II-IV, which were used to measure the electrical conductivity. Logarithmic plots of  $R$  and  $\sigma$  against  $1/T$  show that in n-type specimens with current-carrier concentrations of  $\sim 1.4 \times 10^{17} \text{ cm}^{-3}$  at room temperature, the conductivity  $\sigma$  remains constant up to room temperature and the Hall constant remains constant up to 500°K. At higher temperatures,  $\sigma$  at first decreases and then rises steeply again. The Hall constant falls-off rapidly and almost linearly above 500°K. The differential thermal emf for the same specimen is

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E032/E414

found to increase with temperature (in absolute magnitude) up to about 500°K (almost linearly) and then falls off. The Nernst-Ettinghausen constant  $Q^{\perp}$  was found to be negative at low temperatures ( $H = 6570$  Oe).  $Q^{\perp}$  changes sign and becomes positive at about 650 to 670°K. Analysis of these results shows that at low temperatures (below room temperature) scattering on impurity ions predominates. This holds even when the electron gas is degenerate, when the mobility of the current carriers is temperature-independent. At high temperatures the positive sign of the Nernst-Ettinghausen constant suggests scattering by phonons. It is estimated that the effective electron mass is  $0.07 m_0$ . There are 6 figures. †

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR  
(Physicotechnical Institute of the AS Turkmen SSR)

SUBMITTED: May 5, 1962

Card 3/4



The Nernst-Ettinghausen thermomagnetic effects in the system InAs-InP.  
Ya. Agayev, O. Ismailov.

Thermal conductivity, thermoemf and electrical conductivity of AlSb,  
alloyed with sulfur. Ya. Agayev, A. R. Mikhailov.

Investigation of the galvanomagnetic properties of solid solutions  
in the system InP-InAs. A. Allanazarov, Ya. Agayev.

Electrical and galvanomagnetic properties of InSb in the region of  
intrinsic conductivity. O. Mosanov, Ya. Agayev.  
(Presented by Ya. Agayev--15 minutes).

Report presented at the 3rd National Conference on Semiconductor  
Compounds, Kishinev, 16-21 Sept 1963

L 18528-63

EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3 JD/JG

ACCESSION NR: AP3005879

S/0202/63/000/004/0009/0015

AUTHOR: Sukhanov, S.; Agayev, Ya.; Arustamova, M. V.

65

TITLE: Hall transducers made of 4InAs·InP alloy

64

SOURCE: AN Turkmen SSR. Izvestiya. Ser. fiziko-tekhn., khimichesk. i geologicheskikh nauk, no. 4, 1963, 9-15

TOPIC TAGS: indium arsenide-indium phosphide Hall transducer, indium arsenide, indium phosphide, Hall transducer, Hall-transducer sensitivity, Hall-transducer temperature stability, transducer sensitivity, transducer temperature stability

ABSTRACT: A study of the basic parameters of Hall transducers made of the 4InAs·InP alloy has been conducted. Experimental specimens were 0.15 to 0.5 mm thick, 2 to 5 mm wide, and 4.5 to 12 mm long. The ohmic contacts were made by alloying In with an alloy consisting of In and 5% Ag. After polishing, all specimens were subjected to etching in a 2% boiling solution of HCl. Experimental data were obtained on the temperature dependence of electrical conductivity and the Hall constant, the resistance between input and Hall electrodes, the sensitivity, the Hall constant and the dependence of Hall voltage

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L 18528-63

ACCESSION NR: AP3005879

on applied magnetic field intensity, the dependence of a specimen output voltage on the frequency of control voltage, and the temperature stability of the transducers. The results of the study are as follows: 1) The electrical parameters of the Hall transducers considered permit their utilization for magnetic field measurement purposes in various testing equipment. 2) Because of their high thermal stability, devices based on  $4\text{InAs}\cdot\text{InP}$  can operate within an ambient temperature of  $+100\text{C}$  and a wide range of atmospheric pressure and humidity. 3) A linear variation of the Hall emf as a function of the applied magnetic field intensity facilitates measurements of magnetic fields up to 22,000 oe with an accuracy of 0.5%. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: Fiziko-tehnicheskiy institut AN Turkmenskoy SSR (Physicotechnical Institute, AN Turkmen SSR)

SUBMITTED: 18Dec62

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: GE

NO REF SOV: 005

OTHER: 000

Card 2/2

SUKHANOV, S.; AGAYEV, Ya.; ARUSTAMOVA, M.V.

Hall generators made from 4InAs InP. Izv. AN Turk. SSR. Ser. fiz.-tekh.,  
khim. i geol. nauk no.4:9-15 '63. (MIRA 17:2)

1. Fiziko-tehnicheskiy institut AN Turkmenskoy SSR.



ACCESSION NR: AP3001194

S/0202/63/000/003/0106/0108

AUTHORS: Agayov, Ya.; Allaiazarov, A. [Abstracter's note: Original type badly blurred.]

TITLE: On galvanomagnetic properties of n-InP

SOURCE: AN TurkmSSR. Izv. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 3, 1963, 106-108

TOPIC TAGS: galvanomagnetic property, indium phosphide, electric resistivity, magnetic field strength, current carrier mobility

ABSTRACT: The electric and galvanomagnetic properties of indium phosphide have been investigated. The polycrystalline InP specimen was obtained in the form of a  $10 \times 5 \times 2 \text{ mm}^3$  rectangular parallelepiped. Measurements were made in the temperature interval 90-1000K, and the temperature dependence of the Hall coefficient R was determined under constant 6570 oersted field strength in vacuum. The various property measurements made were: the Hall effect, the resistivity,  $\Delta\rho/\rho$ , all as functions of temperature and magnetic field strength. Using the data of R  $\sigma$

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ACCESSION NR: AP3001494

and  $\Delta\rho/\rho_0$ , the current carrier mobility  $u$  was calculated and shown to depend on temperature  $T$  according to the law

$$\frac{1}{u} = aT^{3/2} + bT^{-3/2}.$$

Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Fiziko-tehnicheskij institut, AN Turkmenskoy SSR (Physicotechnical Institute, AN Turkmen SSR).

SUBMITTED: 25Dec63

DATE ACQ: 12Jun63

ENCL: 00

SUB CODE: SS

NO REF SOV: 002

OTHER: 001

Card 2/2

AGAYEV, Ya.; SLOBODCHIKOV, S.V.

Photoelectric properties of InP. Izv. AN Turk. SSR. Ser. fiz.-tekh.,  
khim. i geol.nauk no.6:109-110 '63. (MIRA 18:1)

1. Fiziko tekhnicheskii institut AN Turkmenskoy SSR.

ACCESSION NR: AP4037554

S/0202/64/000/002/0003/0007

AUTHOR: Agayev, Ya.; Voronkova, N. M.; Slobodchikov, S. V.

TITLE: Photomagnetic effect in p-type GaAs

SOURCE: AN TurkmSSR. Izv. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 2, 1964, 3-7

TOPIC TAGS: photomagnetic effect, gallium arsenide, semiconductor, energy converter, current carrier lifetime, carrier lifetime computation

ABSTRACT: Photomagnetic effect in p-type GaAs was studied in a temperature range from 80 to 300K as a function of radiation and magnetic field intensities. The specimens had a concentration range from  $10^{13}$  to  $10^{17}$   $\text{cm}^{-3}$  and were obtained by zone melting with and without iron doping. The incident illumination provided by a 500-watt tungsten lamp was modulated by a rotating chopper and filtered to pass the 600—800 $\mu$  band. The magnetic field varied up

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ACCESSION NR: AP4037554

to 10 Koe and the temperature function was plotted at 8 Koe. The photomagnetic effect was observed in specimens having concentration below  $10^5 \text{ cm}^{-3}$ . The temperature function of a short-circuit photomagnetic current has an "S" shape and varies by more than an order of magnitude from 80 to 300K, which is at variance with Hurd's results (Proc. Phys. Soc. v. 79, 507, 1962). The d-c component of the illumination exerts an influence on the photomagnetic effect only at low temperatures. The photomagnetic effect as a function of incident radiation and magnetic field intensities was found to be linear in both cases. It is concluded that the magnitudes of experimental variables were confined within the limitations of the small-signal approximation which, consequently, could be used to compute the lifetime of minority carriers. Orig. art. has: 4 figures, 4 formulas, and 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR  
(Technical Physics Institute, AN Turkmen SSR)

Card 2/3

ACCESSION NR: AP4037554

SUBMITTED: 19Jul63

DATE ACQ: 05Jun64

ENCL: 00

SUB CODE: SS

NO REF SOV: 000

OTHER: 006

Card 3/3

AGAYEV, Ya.; MIKHAYLOV, A.F.

Heat conductivity and thermo-e.m.f. in pyrites. Izv. AN Turk.  
SSR. Ser. fiz.-tekh., khim. i geol. nauk no.3:8-13 '64  
(MIRA 18:1)

1. Fiziko-tekhnicheskiiy institut an Turkmenskoy SSR.

ACCESSION NR: AP4033415

S/0202/64/000/001/0013/0016

AUTHORS: Agayev, Ya.; Mikhaylova, M. P.; Slobodchikov, S. V.

TITLE: Photomagnetic properties of p-InAs

SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 1, 1964, 13-16

TOPIC TAGS: photomagnetic effect, p indium arsenate, diffusion length, step up transformer, preamplifier, amplifier 28IM, voltage analyzer AN 1 50, monochromator ZMR 2, global lamp, sodium chloride

ABSTRACT: The spectral distribution of photomagnetic effect in p-InAs was studied experimentally at various temperatures. From the data obtained, estimates were made of the diffusion length for migration in n- and p-type InAs in the temperature range of 80-300K. The method used for the photomagnetic measurement was the one used by M. P. Mikhaylova, D. N. Nasledov, and S. V. Slobodchikov (FTT, t.5, vyp. 8, 2317, 1963; FTT, t.IV, vyp.5, 1962). The signal was fed into the step-up transformer of the preamplifier and then into a measuring amplifier 28 IM and a voltage analyzer AN-1-50. The specimen was placed in a glass cryostat with a sapphire window. It was possible to vary the magnetic field from 0 to 8000.

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ACCESSION NR: AP4033415

oersteds. The plots of the spectral distribution of the photomagnetic effect and the photoconductivity were recorded by the monochromator ZMR-2, and a global lamp was used as a source of radiation. The entry and exit gaps in the monochromator were about 0.5 mm. The linear dispersion of the instrument at a wavelength of  $5 \mu$  was  $\sim 1.2 \mu/\text{mm}$ . The results showed that the curve of spectral, distribution of photomagnetic effect shifted along the wavelength domain with temperature increase. The photomagnetic effect was very small at low temperatures, reaching a maximum at  $\sim 250\text{K}$  and then falling. The p-diffusion length also increased with temperature. It reached a peak of  $\sim 12 \mu$ , corresponding to a temperature of  $270\text{K}$  and then fell sharply. The n-diffusion length decayed uniformly with temperature. Orig. art. has: 4 figures and 2 equations.

ASSOCIATION: Fiziko-tehnicheskij institut, AN Turkmenskoy SSR (Physico-technical Institute, AN Turkmen SSR)

SUBMITTED: 11Dec63

DATE ACQ: 28Apr64

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 002

OTHER: 003

Card 2/2

ACCESSION NR: AP4044252

S/0202/64/000/004/0103/0105

AUTHOR: Agayev, Ya., Mikhaylov, A.R.

TITLE: Heat conductivity of AlSb monocrystals

SOURCE: AN TurkmSSR. Izv. Ser. fiziko-tekhnicheskikh, khim. i geol. nauk, no. 4, 1964, 103-105

TOPIC TAGS: aluminum antimonide, semiconductor, monocrystal, heat conductivity

ABSTRACT: Aluminum antimonide is a typical representative of semiconductors of the type  $III_BV$ . Although a number of papers have been written on its heat conductivity in a narrow range of temperatures, no study has been made of the heat conductivity and other kinetic effects of AlSb alloyed with sulfur. It has been shown that the presence of impurities generally decreases the heat conductivity of AlSb, and that the heat conductivity of AlSb decreases with increasing temperature. The authors investigated the temperature dependence of the heat conductivity of pure monocrystals and AlSb and monocrystals of AlSb alloyed with sulfur in the temperature range 120-620K. The heat conductivity was measured by the absolute method in a stationary heat field, as first described by Kh. I. Amirkhanov (Izv. AN UzSSR, 4, 39-59, 1949) and improved by Ya. Agayev and A. R. Mikhaylov (Izv. AN TSSR, No. 3, 1964). Measurement errors did not exceed 5-6%.

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ACCESSION NR: AP4044252

The samples had a cylindrical form, 12-13 mm in diameter and 9-10 mm in height. It was found that the heat conductivity depends mainly on the heat conductivity of the crystal lattice, and that sulfur admixture has little effect. In the temperature range 170-620K the change in heat conductivity conforms to the law  $\kappa \sim T^{-1}$ ; below 170K, this relationship is less regular. "In conclusion, the authors thank M.S. Mirgalovskaya and I.A. Strel'nikova for kindly furnishing the samples, as well as Doctor of Physical and Mathematical Sciences L.S. Stil'bans, A.V. Petrov and Kh. M. Kuliyeu for making it possible to carry out control measurements at the Institut poluprovodnikov AN SSSR (Institute of Semiconductors, AN SSSR)". Orig. art. has: 2 formulas and 2 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR (Physicotechnical Institute, AN Turkmen SSR).

SUBMITTED: 26Dec63

ENCL: 00

SUB CODE: TD, IC

NO REF SOV: 007

OTHER: 001

Card 2/2

AGAYEV, Ya.; KOSYANOV, G.

Methodology of determining the characteristics of the piezoelectric effect  
in  $\text{InSb}$  crystals. Izv. AN SSSR. Ser. Fiz.-mat. nauk, 1961, no. 5:38-45. (MIRA 17:12)

1. Electro-technical Institute AN SSSR, Leningrad, U.S.S.R.

L 23803-65 EWP(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP404437

S/0202/64/000/005/0118/0120

AUTHOR: Agayev, Ya., Ismailov, O.

TITLE: Determination of the effective electron mass in the system InAs-InP

SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 5, 1964, 118-120

TOPIC TAGS: electron mass, indium arsenide, indium phosphide, charge carrier concentration, hole formation 27 27

ABSTRACT: This brief communication presents the results of a determination of the effective mass of conduction electrons in InAs-InP alloys at 300K, and gives the temperature dependence of the effective electron mass in the range 300 - 550K

~~for the composition 8InAs·2InP. The effective electron mass was determined at room temperature for all compositions by means of the formula~~

$$n = \left(\frac{m^*}{m}\right)^{3/2} \cdot \frac{4}{\sqrt{\pi}} \cdot \left(\frac{2\pi mkT}{h^2}\right)^{3/2} F_{1/2}(\eta). \quad (1)$$

In the composition 8InAs·2InP, the effective electron mass was found to increase monotonically with the temperature. This may be explained by the nonparabolicity  
Card 1/2

L 23803-65

ACCESSION NR: AP4049437

of the conduction band in this alloy. Since the charge carrier concentration in this alloy remains constant up to 600K, the increase in the effective mass cannot be due to an increase in the concentration of electrons in the conduction band. At 450-500K, the effective electron mass reaches a maximum in the composition  $8\text{InAs}\cdot 2\text{InP}$ , but it could not be calculated above 500K because of the appearance of holes. Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Fiziko-tekhicheskij institut AN Turkmenskoy SSR (Physicotechnical Institute, Academy of Sciences, Turkmen SSR)

SUBMITTED: 24Apr64

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 004

OTHER: 006

Card 2/2

ACCESSION NR: APL034917

S/0181/64/006/005/1380/1387

AUTHORS: Agayev, Ya.; Mosanov, O.

TITLE: Electrical and galvanomagnetic properties of InSb in the zone of natural conductance

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1380-1387

TOPIC TAGS: reluctance, Hall coefficient, magnetic field, temperature dependence, indium antimonide, carrier scattering

ABSTRACT: The authors measured the reluctance and Hall coefficient in dependence on magnetic field strength (from 400 to 20 000 oersteds) and on temperature (from 300 to 675K). Experimental values of reluctance in InSb at room temperature are in better agreement with theory on the assumption that relaxation time of current carriers is independent of energy than on the assumption of energy dependence. Experimental studies have uncovered a second zone of squared reluctance at high temperatures (above 400K). This may be explained on the basis of existing theories. Measurements of reluctance in InSb (400-600K) in weak magnetic fields supply grounds for explaining the mechanism of carrier scattering (electrons). Experimental values of reluctance due to electrons in the conduction band in weak fields  
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ACCESSION NR: AP4034917

are near theoretical values. The authors show that the Hall coefficient does not depend on magnetic field strength during transition from  $\mu_n H/c$  from below 1 to above 1 in the temperature interval 300-650K ( $\mu_n$  is electron mobility and H magnetic field strength). "The authors thank Professor D. N. Nasledov for his interest in the work and V. V. Galavanov for useful discussion." Orig. art. has: 9 figures and 8 formulas.

ASSOCIATION: Fiziko-tehnichesky institut AN Turkm. SSR, Ashkhabad (Physicotechnical Institute, AN Turkm. SSR)

SUBMITTED: 18Nov63

ENCL: 00

SUB CODE: EM, EC

NO REF SOV: 007

OTHER: 012

Card 2/2

AGAYEV, Ya.; SLOBODCHIKOV, S.V.

Photoelectric properties of certain xInAs - yInP alloys.

Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.1:

14-16 '65.

(MIRA 18:7)

~~TOP SECRET~~  
~~Investigation of galvanomagnetic properties in the system~~  
~~InP-InAs~~

AN ... ..  
Investigation of galvanomagnetic properties in the system

galvanomagnetic properties, electrical conductivity, indium  
arsenide, solid solution, ... ..

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ACCESSION NR: AP5011795

ASSOCIATION: Fiziko-tekhnicheskij Institut AN Turkmenakoy SSR

SUBMITTED: 05.01.64

ENCL: 00

SR CODE: 55, EV

Card 3/3

1. 52337-65 EWT(m)/EWP(b)/EWP(t) JJP(c) 5D  
ACCESSION NR: AP5011796 UR/0202/65/000/002/0023/0028

AUTHOR: Agayev, Ya.; Gazakov, O.; Slobodchikov, S. V.

22  
21  
E

TITLE: Photoelectric properties of aluminum antimonide 1

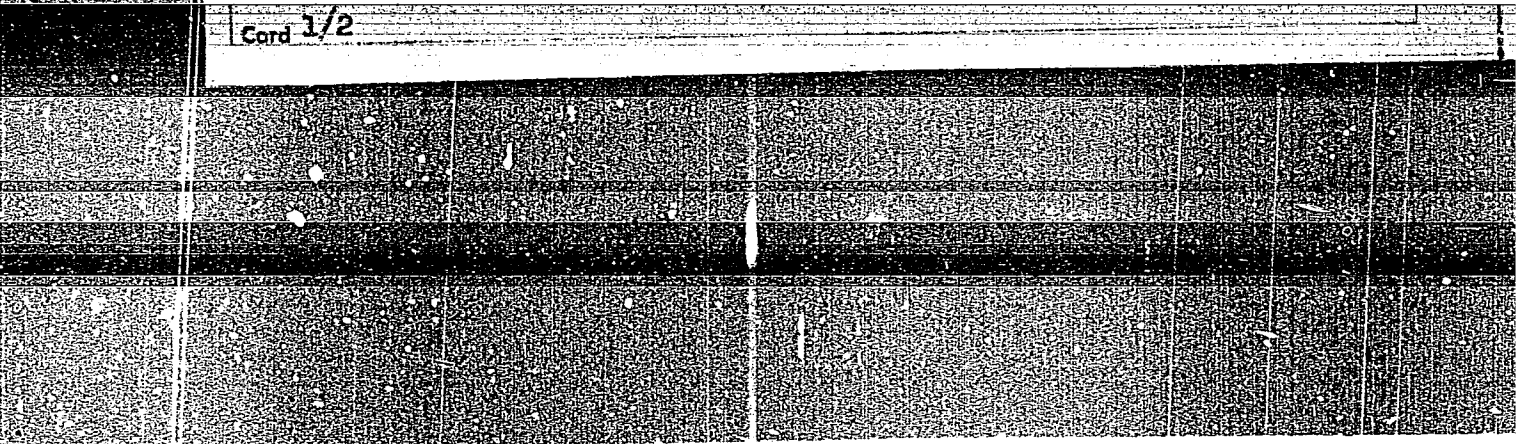
SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 2, 1985, 23-28

TOPIC TAGS: aluminum compound, antimonide, photoelectric property, photosensitivity, temperature dependence, photoresponse, illumination, photoconductivity, light intensity, sulfur, forbidden band

ABSTRACT: The object of the investigation was to measure the distribution of photosensitivity, temperature dependence of the photoresponse, the effect of constant illumination, and the



Cord 1/2



L 52337-65

ACCESSION NR: AP5011796

used as a source of monochromatic light. In many compensated semiconductor compounds with a wide forbidden band, it is often observed an additional photoconductivity component due to the true photoconductivity. However, for aluminum antimonide tested at room temperature, the true photoconductivity was predominant. The width of the forbidden band, evaluated for  $\lambda_g$ , was 1.6 ev. Variation of the photoconductive response with temperature was measured over the interval 80-1000°K. The light source was an incandescent tungsten lamp. An FS-7 filter was used to give only the short wave part of the light. Measurements were also made with white

Light. Strength of the electrical field was approximately 120 v/cm.  
A sublinear relationship with a slope of approximately 0.7 was  
determined between the current and the intensity of the white light  
falling on the sample. Orig. art. has: 6 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR  
(Physicotechnical Institute of the Academy of Sciences, Turkmen SSR)

SUBMITTED: 05May64      ENCL: 00      SUB CODE: MM, EM

NR REF SOV: 002      OTHER: 004

Card 2/2 *7/2*

~~L 58396-65~~ ~~EWT(1)/EWT(m)/EEC(t)/EWP(t)/EWP(b)~~ ~~Pz-6~~ ~~IJP(c)~~ ~~JD/AT~~

ACCESSION NR: AP5016444

UR/0292/65/000/003/0096/0097

28

AUTHOR: Agayev, Ya.; Gazakov, O.; Slobodchikov, S. V.

B

TITLE: Photoconductivity in p-type Al-Sb

SOURCE: AN Turkmen SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 3, 1965, 96-97

TOPIC TAGS: alloy photoconductivity, zonal transition diagram, photoconductivity admixture effect, aluminum alloy, antimony alloy

ABSTRACT: In a previous communication, the authors discussed the photoconductivity of high-resistance samples of compensated n-type AlSb (Izvestiya AN TSSR, ser. FTKhIGN, no. 2, 1965). The present short communication investigates the photoconductivity of low-resistance p-type AlSb samples, establishes the general pattern of the zonal transitions (see Fig. 1 of the Enclosure), and discusses the role of admixtures in photoconductivity effects. Orig. art. has: 2 figures.

ASSOCIATION: Fiziko-tekhnicheskoy Institut AN Turkmensoy SSR (Physics and Engineering Institute, AN Turkmen SSR)

Card 1/3